FREEWAVE

MM2 Series

MM2-MR, 900 MHz Series ISM

The FreeWave MM2-MR radio has been designed to provide the performance, reliability, and quality that our customers have come to know and expect in our products in a MM2 “Mega Mini” form factor for applications where space is at a premium. The MM2-MR has all of the functionality of the larger footprint FGR2 Series of radios.

All radios are designed, manufactured, and tested in Boulder, CO.

Key Features

Improved Low Signal Performance: RISC-based signal demodulation with matched filter

Versatile: A single radio can operate as a Gateway, Endpoint, Repeater, or Endpoint/ Repeater

Unparalleled Signal Performance: GaAs FET RF front end with multistage SAW filtering has an unmatched combination of overload immunity and sensitivity

Selectable Speeds: 115.2 kbps to 153.6 kbps

Secure: Using Frequency Hopping Spread Spectrum (FHSS) technology; available with 128- and 256-bit AES encryption

Size & Performance: Smallest data radio with the highest performance available

Noise Immunity: Superior performance in noise congested environments

Reliable: 100% tested for performance from -40°C to +85°C

Designed, Manufactured, and Tested in Boulder, CO

Made in USA

Transmitter

Frequency Range	902 to 928 MHz
Output Power	Up to 1 W
Range	Up to 97 km (60 miles) with clear line of sight
Channel Spacing	230 kHz
RF Data Rate	115.2 or 153.6 kbps, user-selectable

Receiver

Sensitivity	-107 dBm @ 115.2 kbps for BER 10^{-4} -102 dBm @ 153.6 kbps BER 10^{-4}
IF Selectivity	40 dB at fc +/- 230 kHz
RF Selectivity	50 dB at 896 MHz, 935 MHz
Dynamic Range	+10 dBm 3rd order intercept point at input connector

Data Transmission

Type	Frequency Hopping Spread Spectrum Options: TDMA, Super Epoch TDMA
Modulation	2 level GFSK
Data Throughput	115.2 kbps and 153.6 kbps
Error Detection	32-bit CRC, retransmit on error
Data Encryption	Options: 128- and 256-bit AES encryption
Hopping Zones	16 zones, user-selectable
Hopping Bands	7, user-selectable
Hopping Channels	50 to 112, user-selectable
Hopping Patterns	15 per band, 105 total, user-selectable
Protocol	RS232 / RS485 or TTL

Power Requirements

Operating Voltage	+6.5 VDC to +30 VDC			
Current Consumption	**Voltage**	**Transmit**	**Receive**	**Idle**
	+6.5 VDC	900 mA	100 mA	42 mA
	+12 VDC	515 mA	60 mA	24 mA
	+30 VDC	320 mA	32 mA	13 mA

Interfaces

Data Interface	10-pin header for power, data, and diagnostics 2.5 mm pin spacing RS232 or TTL 1200 bps to 230.4 kbps
Diagnostics Interface	Serial, RS232 or TTL
RF Connector	MMCX (right angle) or SSMC Connector

General Information

Operating Temperature	–40°C to +85°C (–40°F to +185°F)
Humidity	0 to 95%, non-condensing
Dimensions	69.9 L x 61.0 W x 10.2 H (mm) 2.75 L x 2.4 W x 0.4 H (in)
Weight	14 g (0.03 lbs)

Information to Order

Model Number	Description
MM2-MR-R	MMCX Connector
MM2-MR-R-U	MMCX Connector, Class I, Division 2
MM2-MR-R-SR	SSMC Connector
MM2-MR-R-SR005	MMCX Connector with right angle data connector
MM2-MR-T	MMCX Connector, TTL
MM2-MR-T-U	MMCX Connector, TTL, Class I, Division 2

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